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БІОХІМІЧНІ ТА МОРФОЛОГІЧНІ ЗМІНИ ПРОТЯГОМ ФЕРМЕНТАЦІЇ ТА ЗБЕРІГАННЯ КИСЛОМОЛОЧНОГО ПРОДУКТУ, ВИГОТОВЛЕНОГО ЗА ДОПОМОГОЮ ТИБЕТСЬКОГО КЕФІРНОГО ГРИБКА

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BIOCHEMICAL AND MICROBIOLOGICAL CHANGES DURING FERMENTATION AND STORAGE OF A FERMENTED MILK PRODUCT PREPARED WITH TIBETAN KEFIR STARTER

Fermented milk products are a palatable and economical source of a wide range of nutrients: protein, vitamins and minerals. The nutrient composition is similar to the one that milk has, but concentrations of vitamins are in general a little lower. However, in addition to these purely nutritional properties, there is increasing support for a number of other health advantages.

Kefir is a specific dairy product from the group of fermented milks where lactose hydrolysis occurs during fermentation with the simultaneous action of bacteria and yeasts contained in kefir grains. In recent years worldwide interest in the study of natural microbial associations such as “Tibetan or Indian fungi”, “Indian rice”, “Sea rice” is increased. Due to the wide range of biological active substances that are part of beverages, the relative simplicity of cultivation and the possibility of keeping culture for a long time in an active state these natural associations gained widespread in everyday life.

The aim of this study was to determine the optimal temperature ranges of milk fermentation by the microbial association Tibetan Kefir Grains and to set changes during the storage of the fermented milk product. The optimum technological parameters of milk fermentation by Tibetan Kefir Grains compliance are set. Compliance of these parameters ensures the desired metabolic processes and obtaining a dairy product with good organoleptic properties: fermentation temperature is 28±1 °C for 24 hours, acidity of the product is from 80 to 120 % lactic acid, the amount of lactic acid bacteria – $(2.9\pm0.22) \times 10^8$ CFU/cm^3, fungi – $(3.7\pm0.27) \times 10^4$ CFU/cm^3. It was found that during the storage of the fermented milk drink produced on the leaven Tibetan Kefir Grains at the temperature of 4 ± 1 °C for 10 days titratable acidity of the product increased by 1.2 times to 108.4 ± 8.3 °T, the population of lactic acid bacteria (Lactobacillus fermentum and some other) and yeast (Saccharomyces spp and some other) remained at the initial level. This indicates that the finished fermented milk product can be stored without losing functional probiotic properties for at least 10 days and meets the requirements of the standard (ISO 4471). At the same time, at a temperature of +8 ± 1°C the expiration date of the fermented milk drink is decreases to 7 days.

Thus, the industrial use of starter “Tibetan Kefir Grains” will expand the range of fermented milk products with a number of useful properties. Motivated by the strong progress in technology of the probiotic fermented milk product in this work we determined the optimal temperature regimes for milk fermentation by the microbial association “Tibetan Kefir Grains” and set changes in the process of storing the fermented milk product.